
Office of the Inspector General Audit Report

*Management Advisory Memorandum
on Advanced Technology Transit
Bus Project*

Report Number: R3-FT-7-001

Date: December 18, 1996





**U.S. Department of
Transportation**

Office of the Secretary
of Transportation

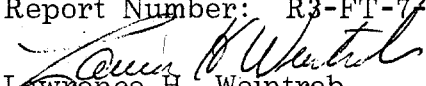
Office of Inspector General

Memorandum

ACTION: Management Advisory Memorandum on

Subject: Advanced Technology Transit Bus Project Date: December 18, 1996

Report Number: R3-FT-7-001

From:  Lawrence H. Weintrob Reply to: JA-1
Attn. of: Assistant Inspector General for Auditing

To: Federal Transit Administrator

Introduction

This Management Advisory Memorandum presents the results of our survey of the Federal Transit Administration's (FTA) Advanced Technology Transit Bus (ATTB) Project. The objective of the survey was to determine whether FTA data supports the March 1996 testimony of the FTA Administrator that the ATTB Project will result in a cleaner, safer, and more cost-effective bus. Survey work was performed between June 6 and August 27, 1996, at FTA Headquarters, Washington, D.C.; Los Angeles County Metropolitan Transportation Authority (LACMTA) and the contractor, Northrop Grumman, Los Angeles, California; and Metropolitan Transit Authority of Harris County (Houston Metro), Houston, Texas. We interviewed FTA officials in the Office of Research, Demonstration, and Innovation, and ATTB Project officials at LACMTA, the contractor, and Houston Metro. Also, we reviewed project files, and analyzed cost data that supported ATTB cost effectiveness.

The ATTB Project is a 7 year, 4-phase effort to develop an advanced technology transit bus. Since Fiscal Year (FY) 1992, a total of \$37.3 million in Federal and local funds has been obligated for the Project. FTA received an additional \$9.6 million in Federal funds in FY 1997. The ATTB Project combines the New Generation Bus Program of Houston Metro and the Advanced Technology Transit Bus Program of LACMTA. The goal of the ATTB Project is to develop a light weight, low emission and low floor heavy-duty transit bus.

Results of Survey

We found FTA had sufficient data to support its conclusion that the ATTB Project will result in a cleaner transit bus. However, data is not sufficient at this time to conclude the ATTB Project will result in a safer and more cost-effective bus. The three areas are discussed below.

FTA data adequately supports the conclusion that the ATTB Project will result in a cleaner transit bus. Our rationale is based on comparing contractor emission test data for the ATTB Project to emission data for other alternatively fueled and clean diesel bus engines. We found the ATTB Project should emit reduced levels of pollutants. Based on the emission data provided by engine manufacturers, we determined the ATTB will comply with emission standards set forth by the Environmental Protection Agency as well as the more stringent standards set forth by the California Air Resource Board for heavy-duty vehicles operating in California.

Regarding safety, FTA data is not sufficient to determine whether the ATTB will result in a safer bus. FTA safety data is limited to three safety-related tests performed by the contractor on the ATTB Structural Test Bed.¹ The tests included a side-impact crashworthiness test, a burn-through test to determine the self-extinguishing characteristics of the fiberglass, and a wheel well-impact test. The results of the three tests showed no apparent structural damage to the test bed.

A significant portion of the safety data will not be available until six ATTB prototypes have been built and tested for compliance with Federal safety requirements, including Federal Motor Vehicle Safety (FMVS) standards. The 27 FMVS standards that apply to transit bus safety include standards for braking systems, emergency exits and window release, and flammability of interior materials. However, we found the contractor's quality assurance plan did not provide for compliance testing with all applicable FMVS standards and the contractor agreed to incorporate additional testing in its plan.

Testing for compliance with FMVS standards is scheduled to begin in March 1997. Based on discussions with the ATTB Project officials, FTA expects the safety compliance testing and evaluation of test results to be completed by June 1997. However, the contractor's test schedule provided by FTA does not identify when FMVS standards compliance testing will be completed. We note that FTA plans to field test four prototypes in revenue service in six urban cities for approximately 1 year, beginning September 1997. For the remaining two buses, one will undergo destructive testing and the other will be tested at the Bus Testing Center at Altoona, Pennsylvania. Deploying prototypes in revenue service could expose the traveling public to undue risk if the buses do not comply with all applicable Federal safety requirements. In our opinion, it is important that FTA ensure ATTB prototypes comply with Federal safety requirements prior to the prototypes being placed in revenue service.

On cost effectiveness, current FTA data is not sufficient to conclude that the ATTB will result in a more cost-effective bus. At the time of our survey, a comprehensive life-cycle cost analysis had not been performed to determine if it would be cost-effective to procure and operate the ATTB. Office of Management and Budget Circular A-94 states "A program is cost-effective if, on the basis of life-cycle cost analysis of competing alternatives, it is determined to have the lowest costs. . . ." This circular provides a checklist of elements to be considered in determining program cost-effectiveness.

FTA Project officials anticipate reduced life-cycle costs from operating the ATTB will offset the higher capital investment needed to procure the ATTB. However, we found projections of reduced life-cycle costs were limited to fuel and brake savings. We determined FTA's reported savings of

¹Structural Test Bed is a pre-prototype structure with a roof, sidewalls and floor but no engine, windows, or seats.

over \$500,000 per year in fuel costs for a fleet of 150 ATTBs was adequately supported by contractor tests, a computer simulation model, and industry data. However, we could not evaluate reported cost savings of \$270,000 per year for replacement brakes for a fleet of 150 ATTBs because the supporting data was not maintained. Also, the contractor did not project savings for other life-cycle costs such as routine bus maintenance and tire replacement. On July 19, 1996, LACMTA requested Northrop Grumman submit a proposal for the management and support of a Life-cycle Cost Analysis Program. In our opinion, FTA must ensure comprehensive life-cycle cost analyses are completed in order to make informed decisions to fund grantee purchases of ATTB.

Recommendation

We recommend the FTA Administrator ensure that the ATTB prototype buses comply with all applicable Federal safety standards before the buses are deployed in revenue service.

Action Required

In accordance with Department of Transportation Order 8000.1C, please provide written comments to the Management Advisory Memorandum within 30 days. For concurrence, we would like to know the actions taken and planned for the recommendation and the estimated completion dates. For nonconcurrence, we would appreciate an explanation of your position. Please feel free to propose alternative courses of action to resolve the recommendation in an effective manner. In addition, please provide us with the results of the safety compliance tests when they are made available to FTA and a copy of the comprehensive cost-effectiveness and life-cycle cost analyses when they are completed. We appreciate the courtesies and cooperation extended by FTA, the grantees, and the contractor. If you have any questions or require additional information, please call Harry H. Fitzkee at (410) 962-3612.

#